

FIG. 1
RELATED ART

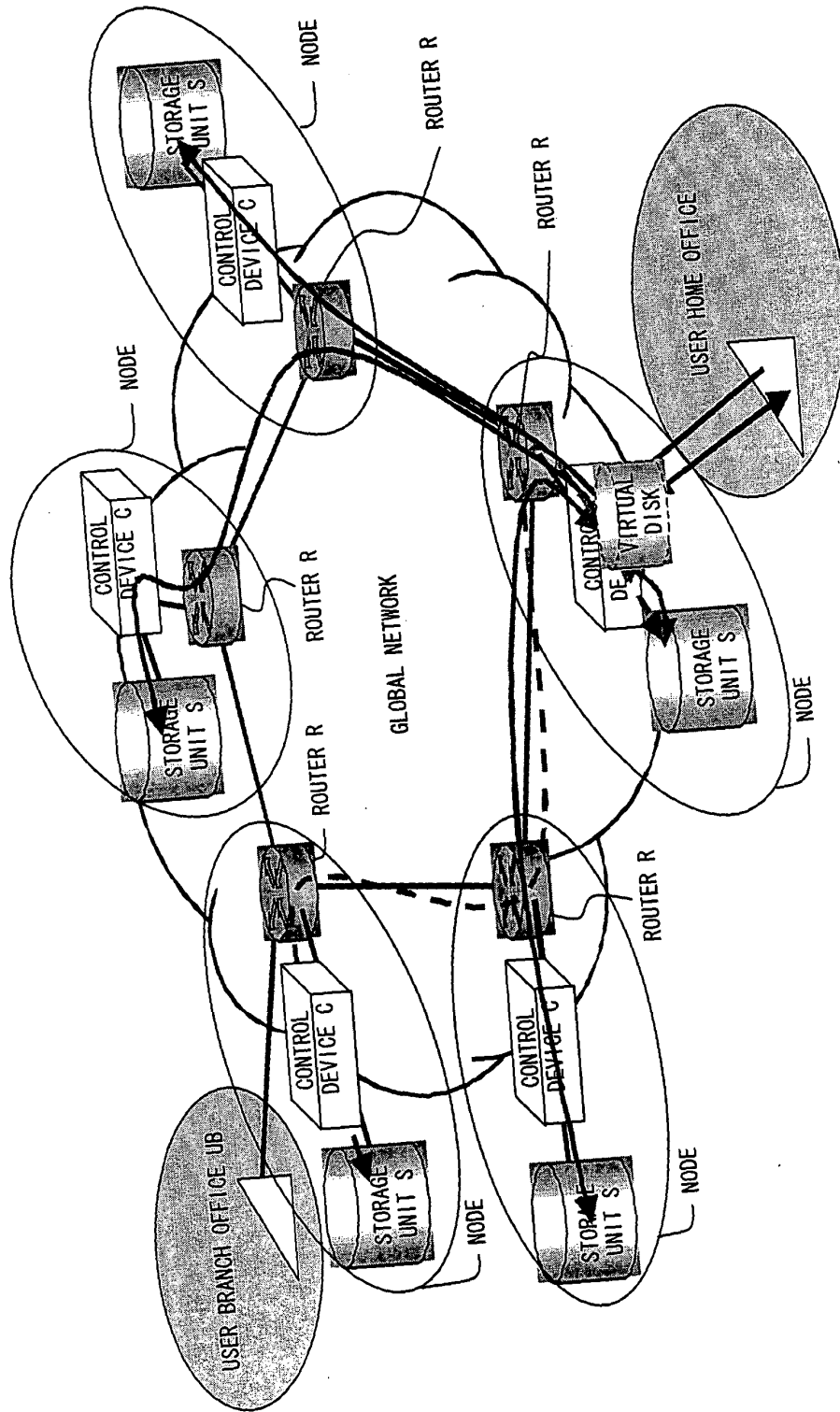


FIG. 2

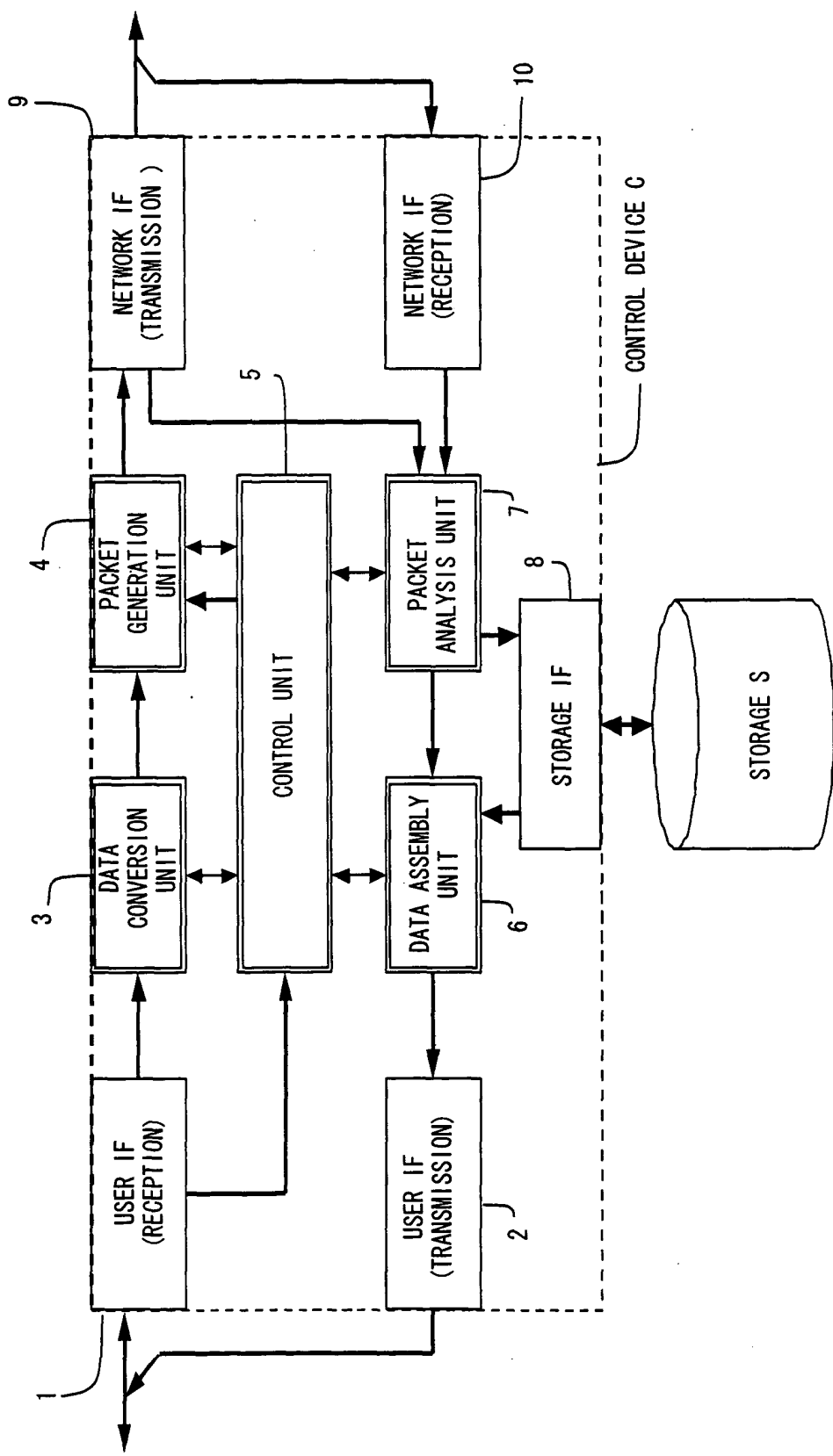


FIG. 3

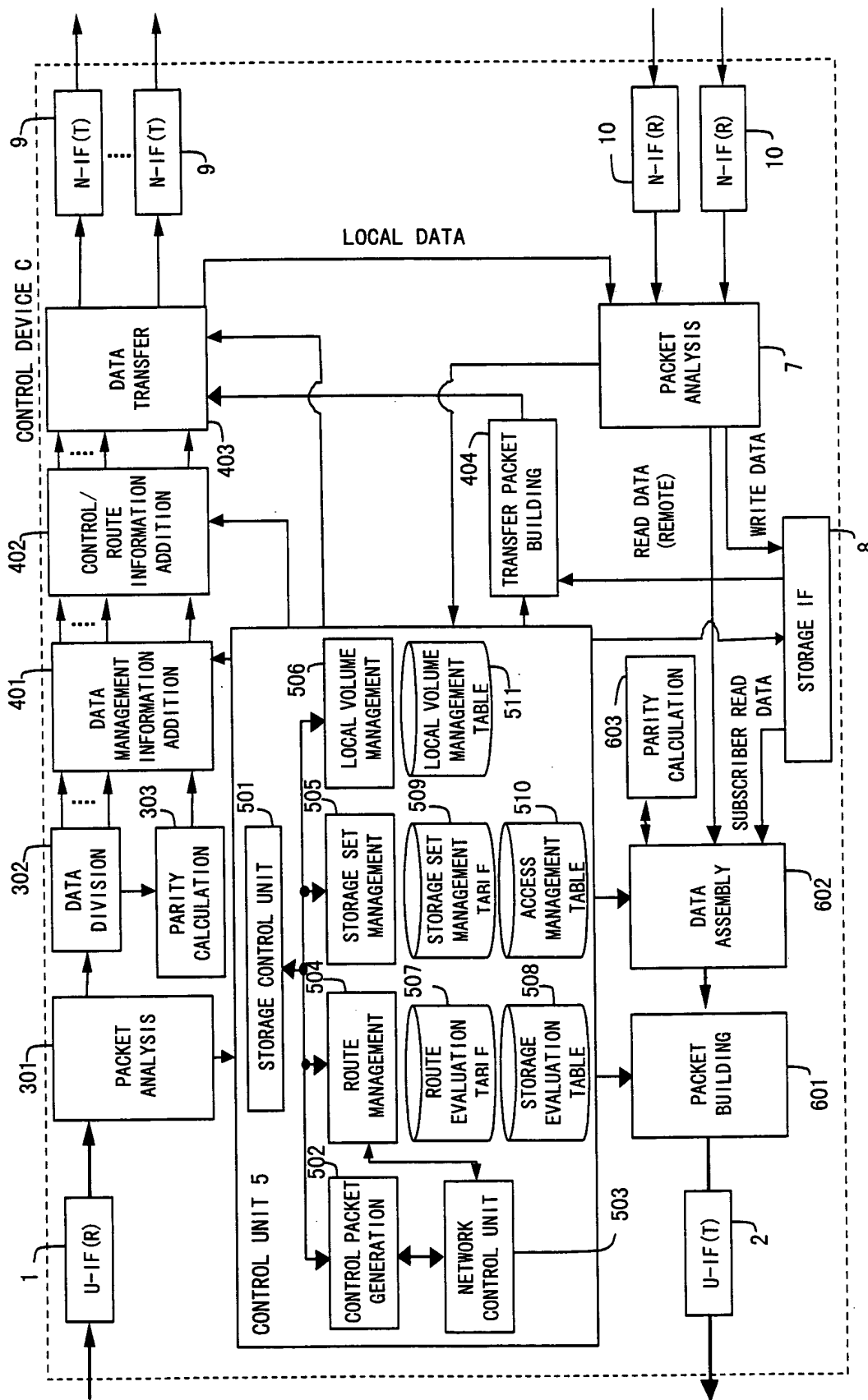


FIG. 4

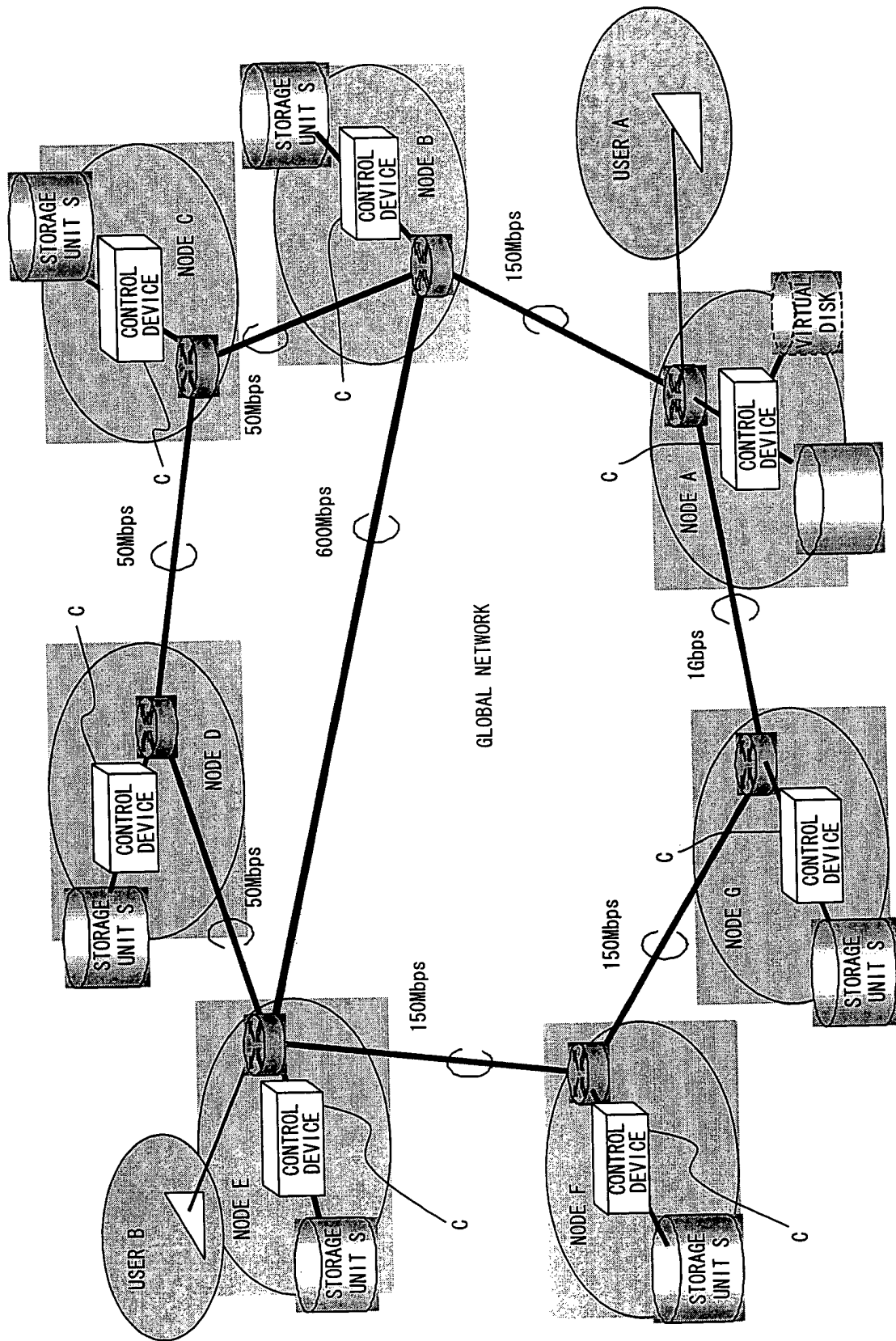


FIG. 5

SECTION	BANDWIDTH	COST	DISTANCE	USE PRIORITY OF STORAGE UNIT
local	—	—	—	∞
A-B	150	100	80	11
B-C	50	50	150	17
C-D	50	100	200	21
D-E	50	50	150	17
E-F	150	100	100	13
F-G	150	100	80	11
A-G	1000	200	10	11
B-E	600	300	200	24

F I G. 6

NODE	ROUTE	STORAGE EVALUATION VALUE	HOP COUNT
A	local	∞	0
B	A-B	11.0	1
C	A-B-C	9.8	2
D	A-B-C-D	8.8	3
	A-B-E-D	9.6	3
E	A-B-E	11.5	2
F	A-G-F	8.3	2
G	A-G	11.0	1

FIG. 7

STORAGE SET NUMBER	PROPERTY																							
	WHOLE			NODE A			NODE B			NODE C			NODE D			NODE E			NODE F			NODE G		
	READ	WRITE	STATE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE	DIVISION	ORIGINAL	USE
00000001	3	4	G	1	O	RW	3	O	RW	2	O	-W				0	O	RW				2	C	R
00000002	3	3	G	2	O	RW				1	O	RW	0	O	RW									
00000003	4	5	R	0	O	RW	1	O	RW	4	O	RW	3	O	RW	2	O	-W						
00000004	2	3	G			RW	2	O		0	O	-W				1	O	RW						

F I G. 8

STORAGE SET NUMBER	000010001
STORAGE SET ACCESS NUMBER	PROPERTY
00000001	RWLO
00000002	RWLO
00000003	-W-0
00000004	-W-0
00000005	—0
00000006	-W-0

FIG. 9

LOCAL STORAGE UNIT		STORAGE SET MANAGEMENT INFORMATION	
STORAGE ACCESS NUMBER	PROPERTY	STORAGE SET MANAGEMENT NUMBER	STORAGE SET ACCESS NUMBER
00000001	RWL	00010021	00040001
00000002	RW-	02003001	00040004
00000003	RW-	00000000	00000000
00000004	R-F	01002111	01000100
00000005	RW-	00010021	00001562
00000006	RW-	00010021	00001563

FIG. 10

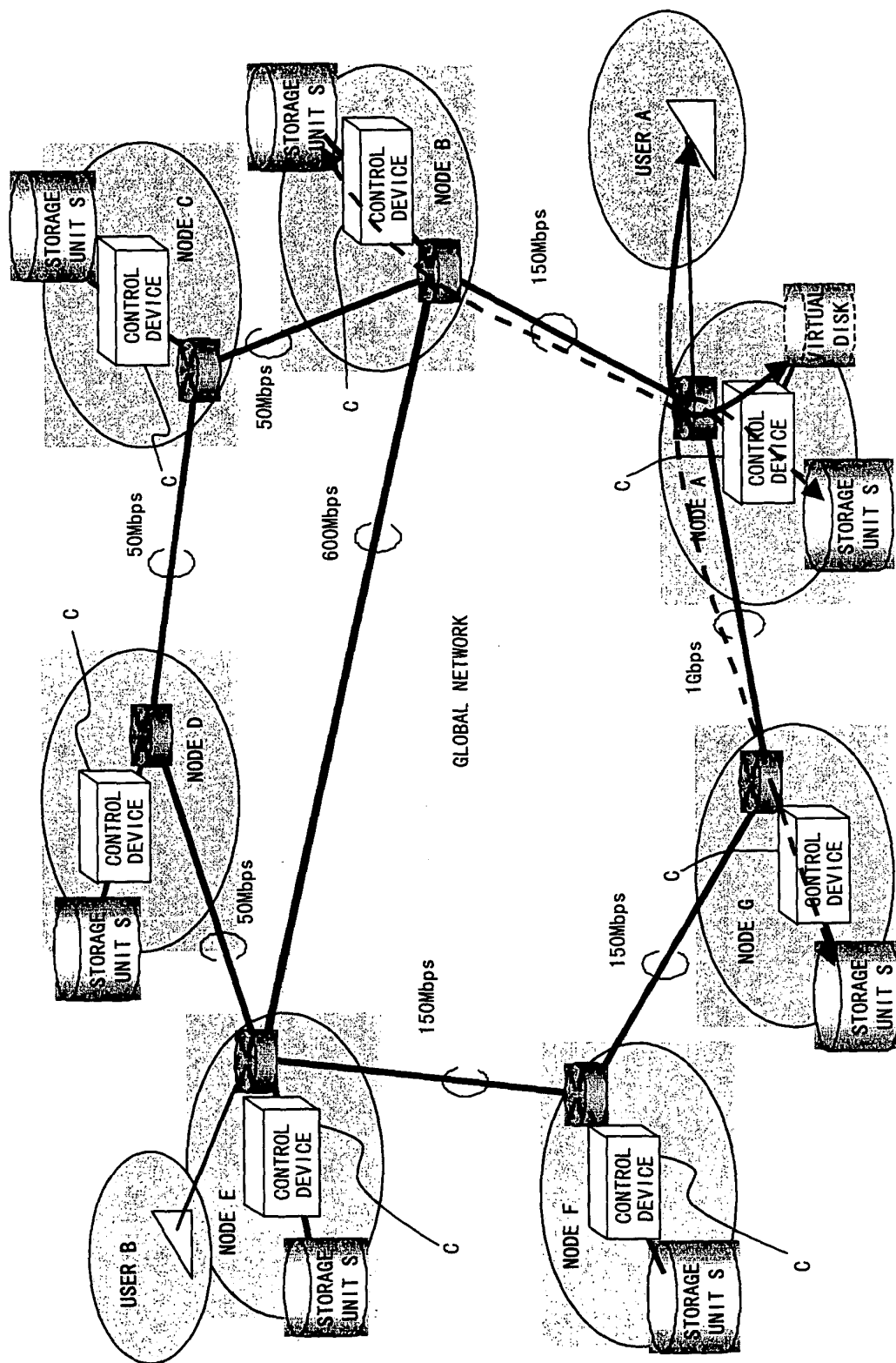


FIG. 11

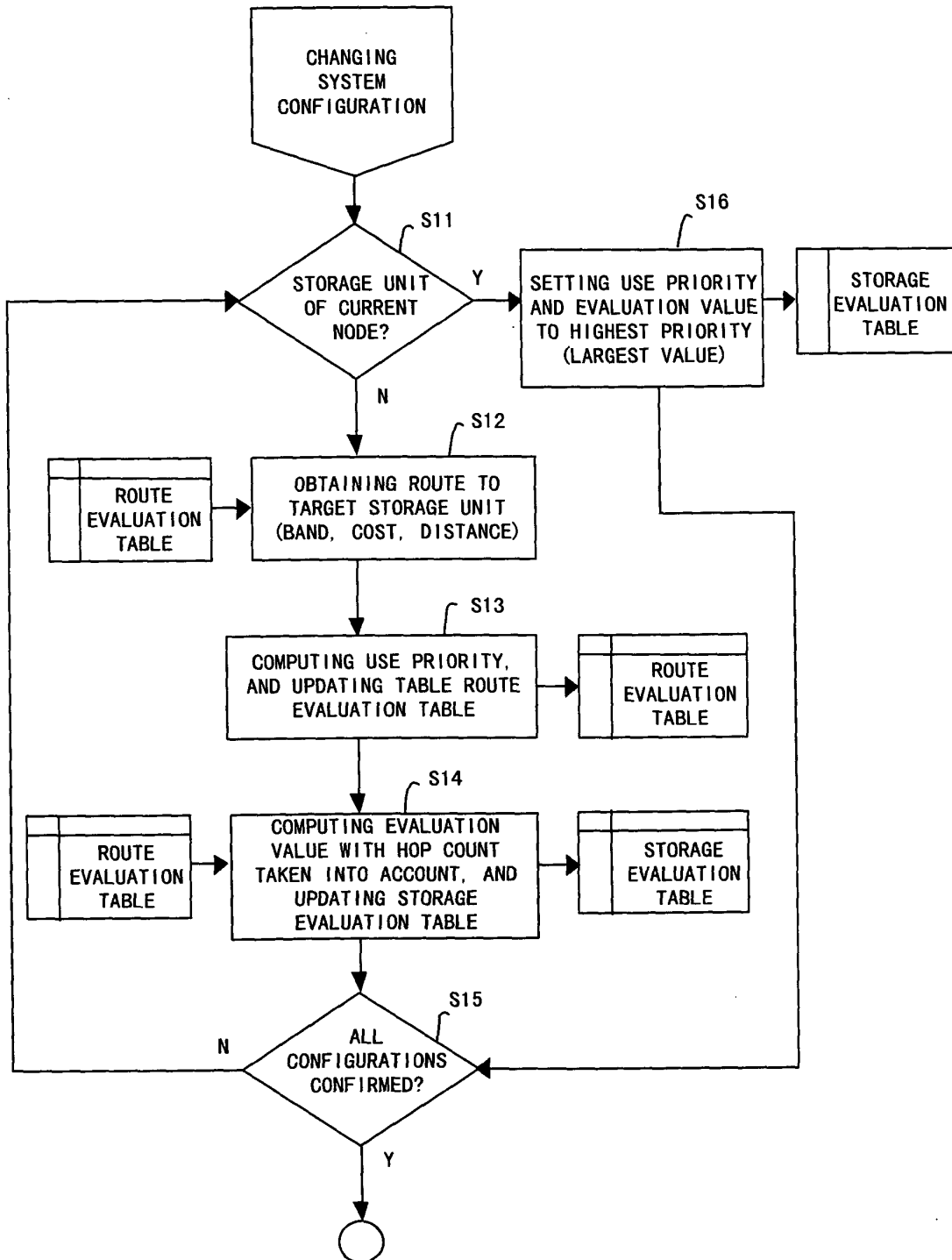


FIG. 12

ROUTE EVALUATION TABLE

SECTION	BANDWIDTH	COST	DISTANCE	USE PRIORITY OF SECTION	USE PRIORITY OF STORAGE UNIT
local	—	—	—	∞	∞
A-B	150	100	80	3	11
B-C	50	50	150	2	17
C-D	50	100	200	1	21
D-E	50	50	150	2	17
E-F	150	100	100	3	13
F-G	150	100	80	3	11
A-G	1000	200	10	10	11
B-E	600	300	200	4	24

FIG. 13A

STORAGE EVALUATION TABLE

NODE	ROUTE	ROUTE EVALUATION VALUE	STORAGE EVALUATION VALUE	HOP COUNT
A	local	∞	∞	0
B	A-B	3	11.0	1
C	A-B-C	2.5	9.8	2
D	A-B-C-D	2	8.8	3
	A-B-E-D	3	9.6	3
E	A-B-E	3.5	11.5	2
F	A-G-F	6.5	8.3	2
G	A-G	10	11.0	1

FIG. 13B

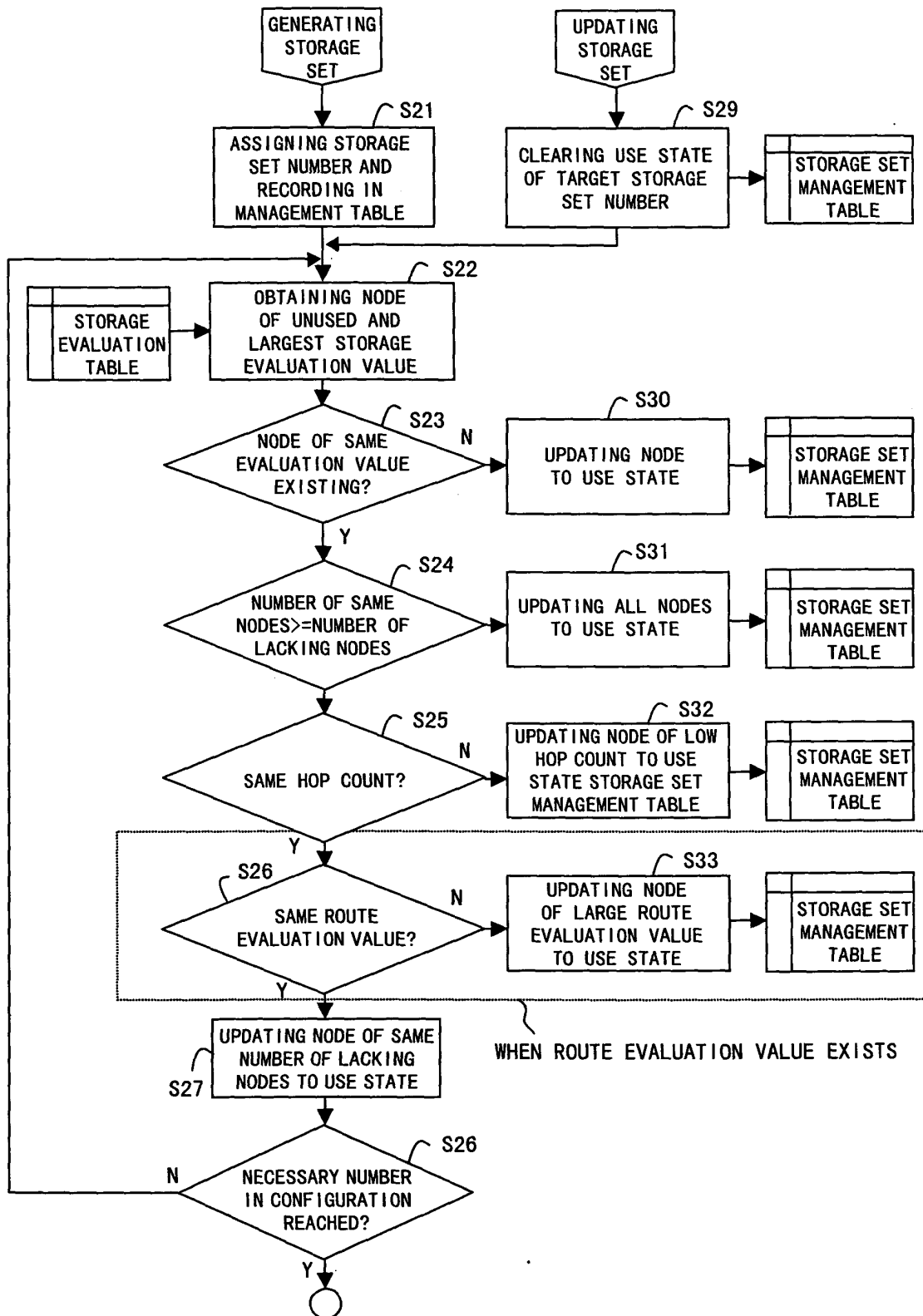


FIG. 14

ROUTE EVALUATION TABLE

SECTION	BANDWIDTH (Mbps)	COST	DISTANCE	USE PRIORITY OF STORAGE UNIT
A-B	150	100	80	11
B-C	50	50	150	17
C-D	50	100	200	21
D-E	50	50	150	17
E-F	150	100	100	13
F-G	150	100	80	11
A-G	1000	200	10	11
B-E	600	300	200	24

FIG. 15 A

STORAGE EVALUATION TABLE

NODE	ROUTE	EQUATION	STORAGE EVALUATION VALUE
A			∞
B	A-B	$= (A-B)$	11.0
C	A-B-C	$= \{ (A-B) + 0.5 (B-C) \} / 2$	9.8
D	A-B-E-D	$= \{ (A-B) + 0.5 (B-E) + 0.33 (D-E) \} / 3$	9.6
E	A-E-D	$= \{ (A-B) + 0.5 (B-E) \} / 2$	11.5
F	A-G-F	$= \{ (A-B) + 0.5 (F-G) \} / 2$	8.3
G	A-G	$= (A-G)$	11.0

FIG. 15 B

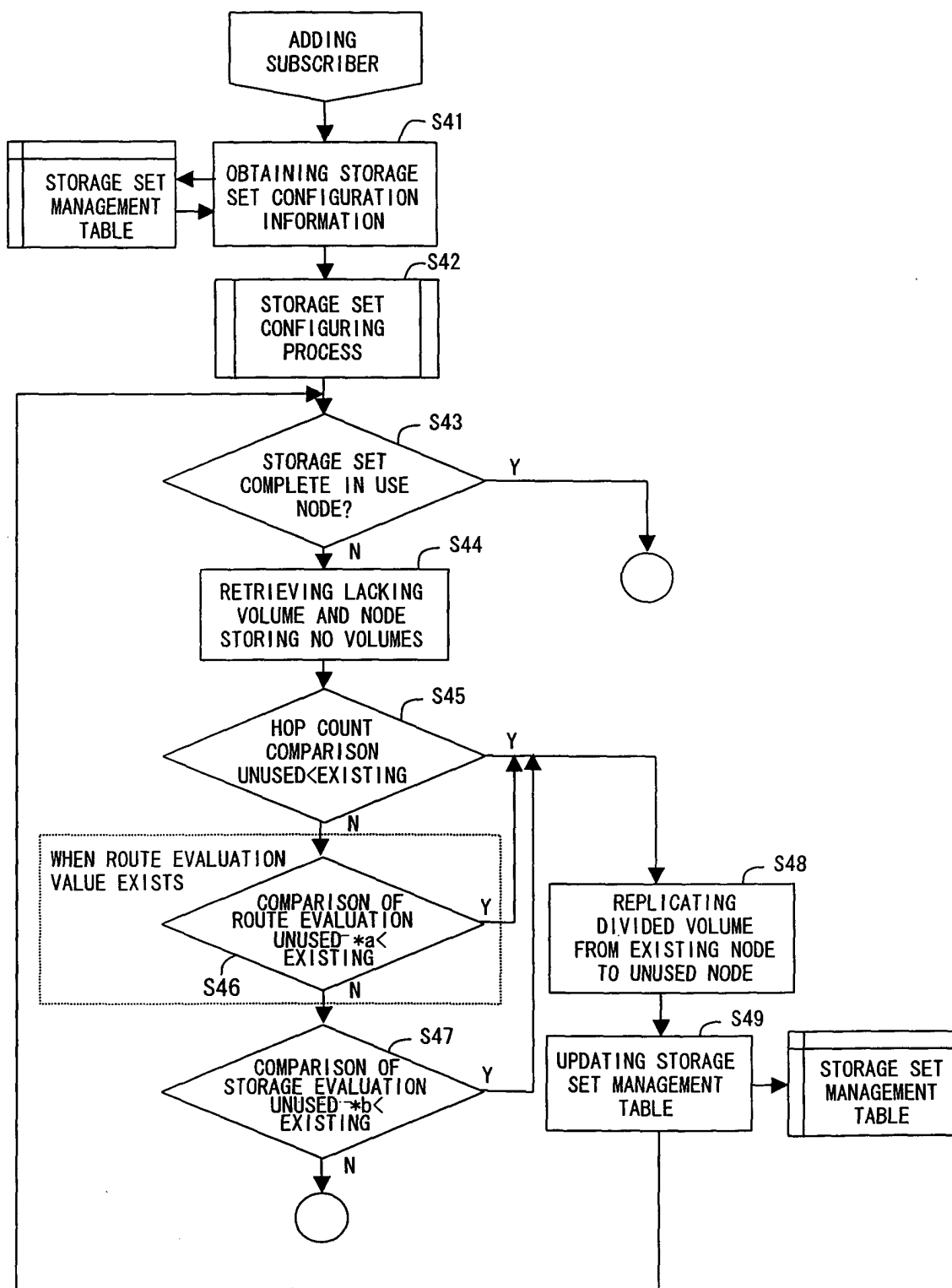


FIG. 16

NODE	USER A			USER E		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	←
B	11.0	1	b	24.0	1	←
C	9.8	2		16.3	2	
D	9.6	3		17.0	1	d'
E	11.5	2	c	∞	0	←
F	8.3	2		13.0	1	
G	11.0	1	d	10.8	2	←

FIG. 17

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	\leftarrow	11.3	2	\leftarrow
B	11.0	1	b	24.0	1	\leftarrow	17.0	1	\leftarrow
C	10.8	2		16.3	2		∞	0	a'
D	9.1	3		17.0	1	d'	21.0	1	\leftarrow
E	11.5	2	c	∞	0	\leftarrow	14.8	2	\leftarrow
F	8.3	2	a'	13.0	1	\leftarrow	10.9	3	\leftarrow
G	11.0	1	d	10.8	2	\leftarrow	8.4	3	\leftarrow

FIG. 18

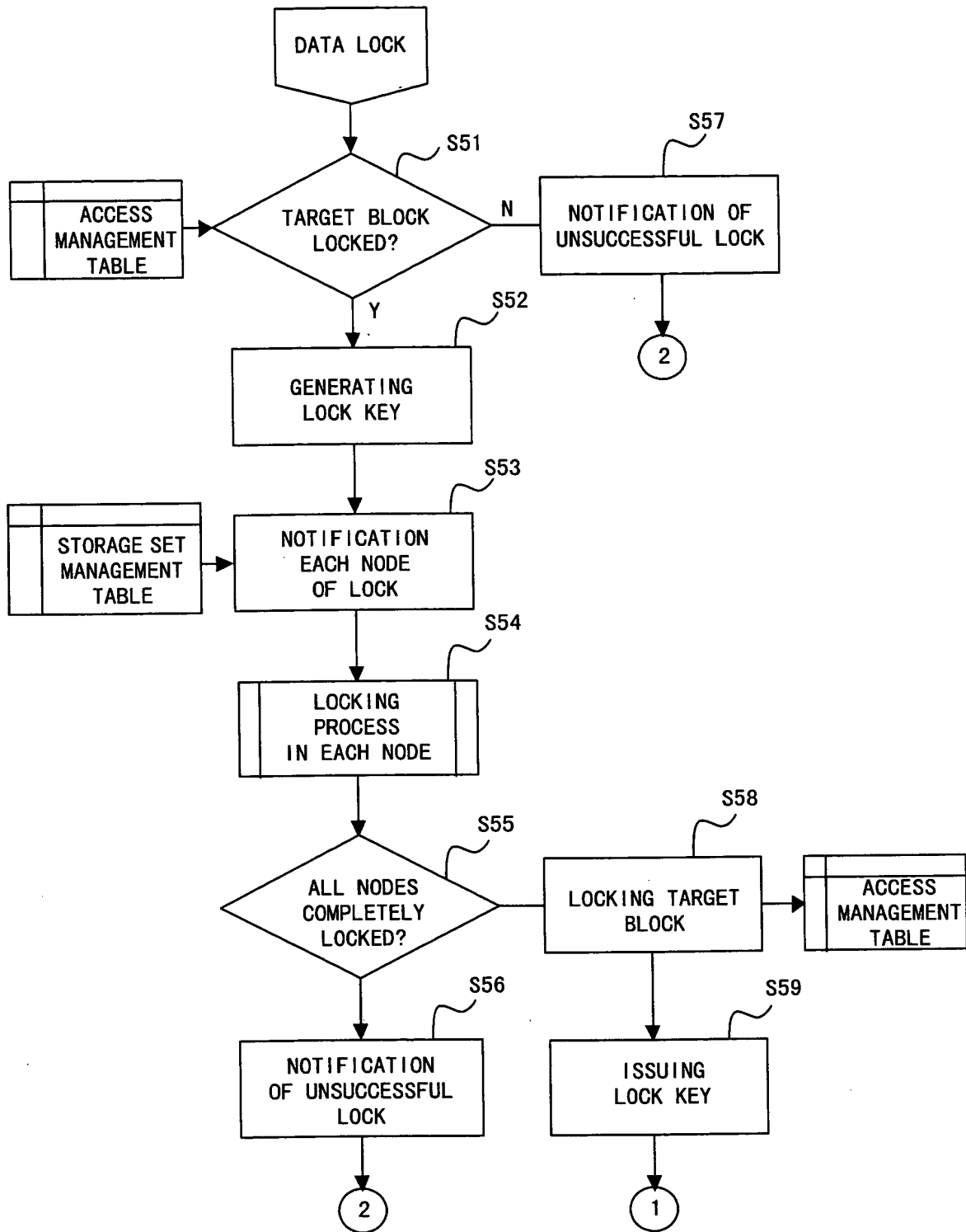


FIG. 19

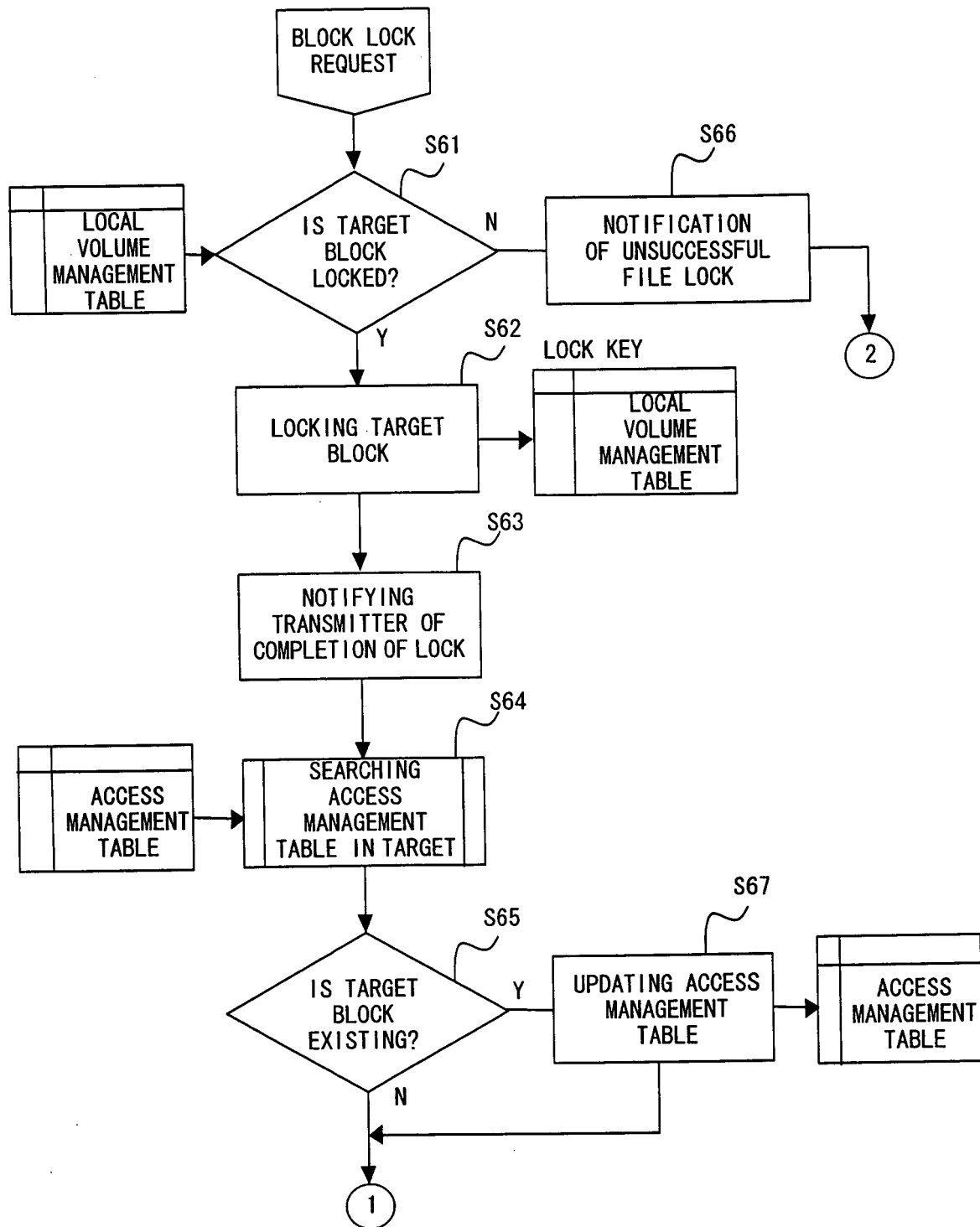


FIG. 20

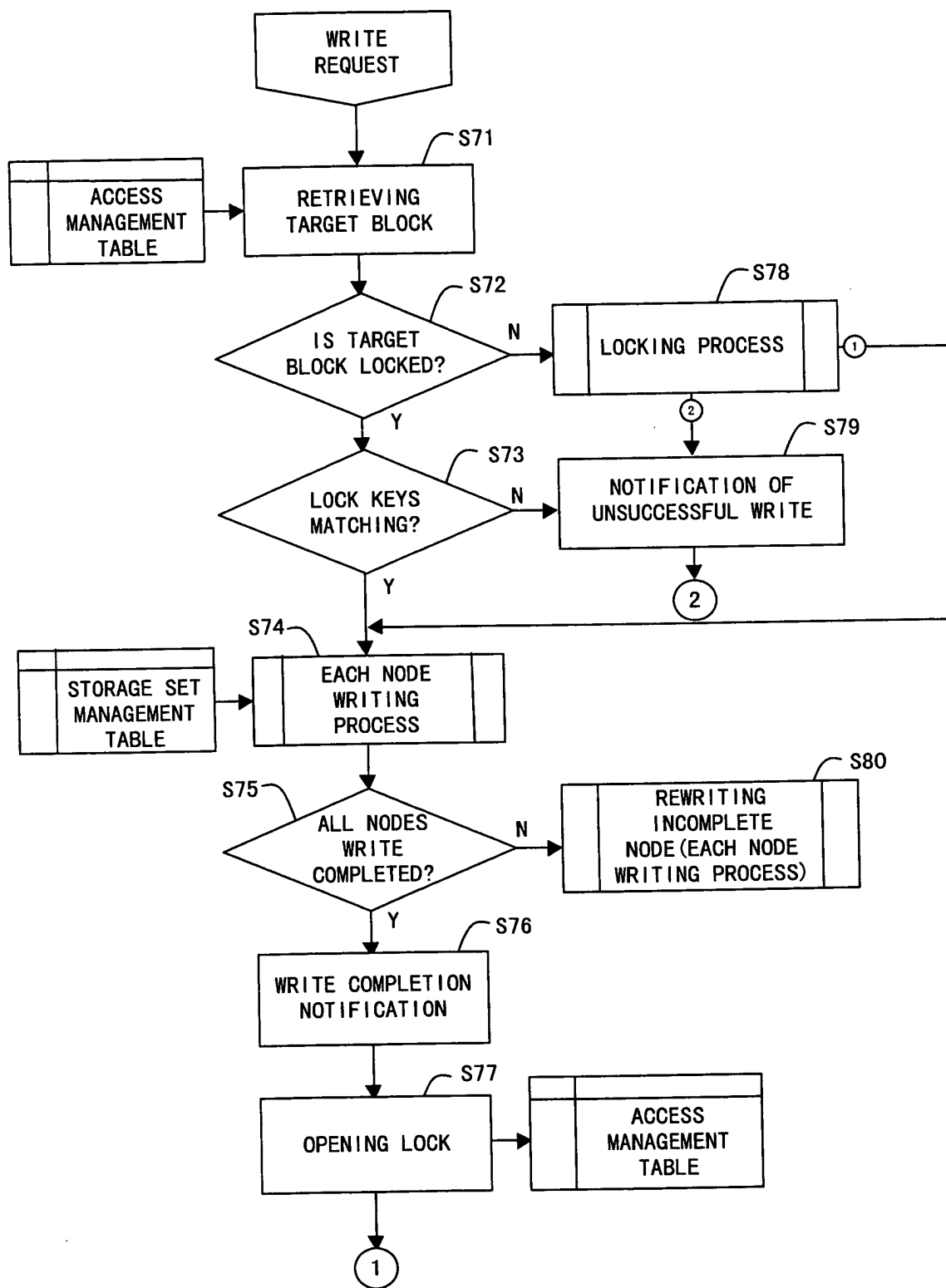


FIG. 21

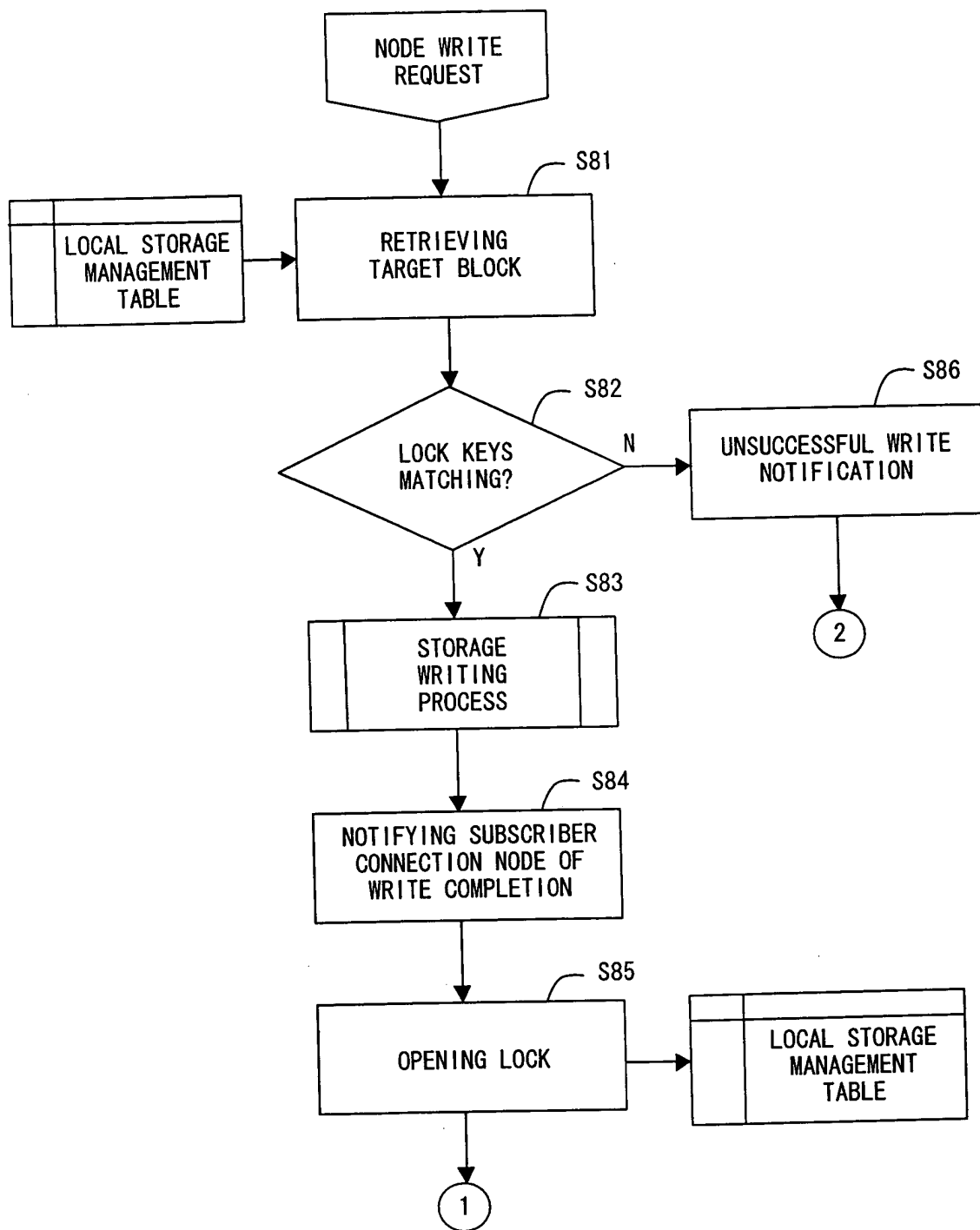


FIG. 22

STORAGE SET NUMBER	000010001	
STORAGE SET ACCESS NUMBER	PROPERTY	LOCK KEY
00000001	RWLO	0111344
00000002	RWLO	1124433
00000003	-W-0	
00000004	-W-0	
00000005	---0	
00000006	-W-0	

F I G. 2 3 A

LOCAL STORAGE			STORAGE SET CONFIGURATION INFORMATION	
STORAGE ACCESS NUMBER	PROPERTY	LOCK KEY	STORAGE SET MANAGEMENT NUMBER	STORAGE SET ACCESS NUMBER
00000001	RWL		00010021	00040001
00000002	RW-	001223	02003001	00040004
00000003	RW-		00000000	00000000
00000004	R-F		01002111	01000100
00000005	RW-		00010021	00001562
00000006	RW-		00010021	00001563

F I G. 2 3 B

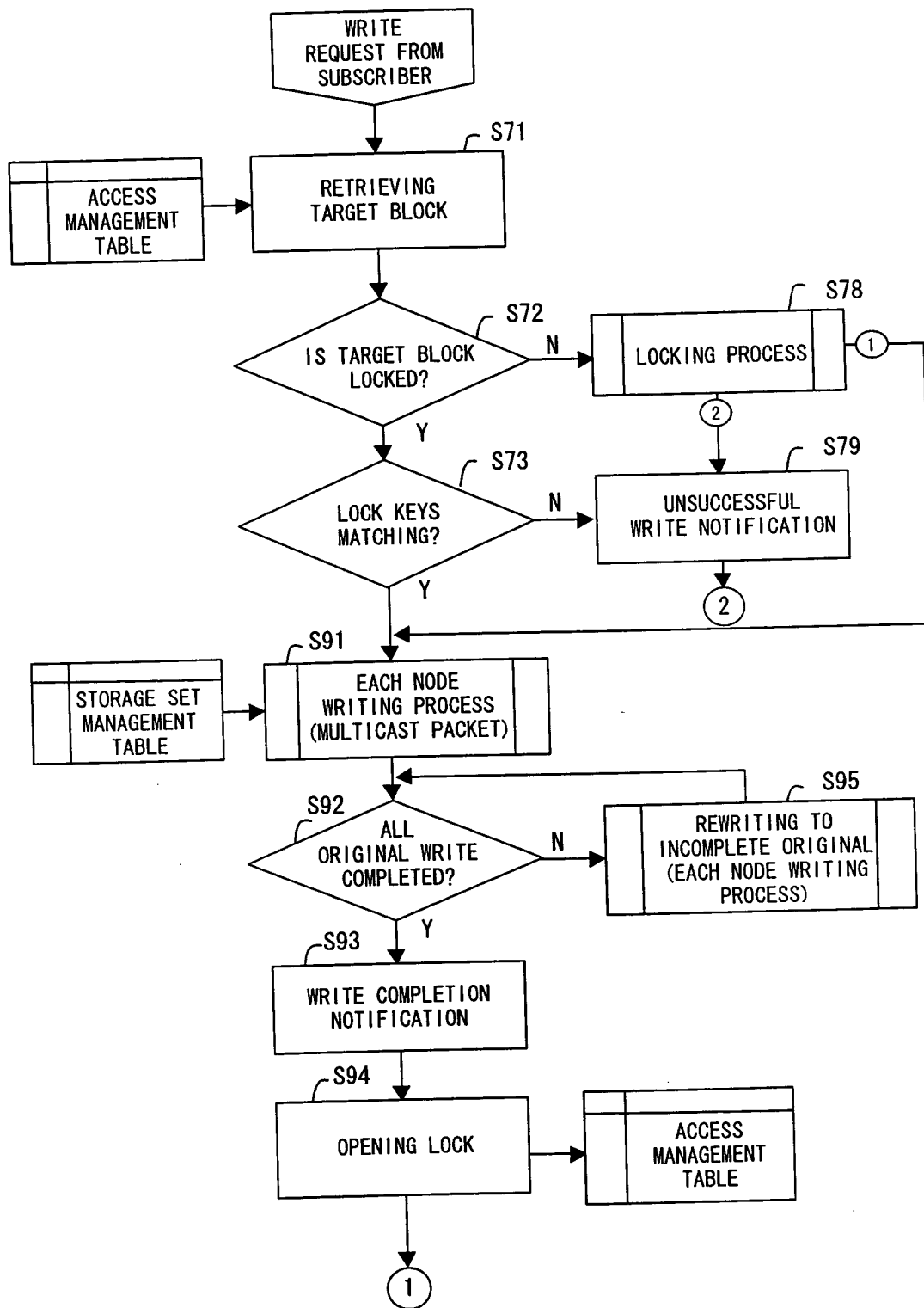


FIG. 24

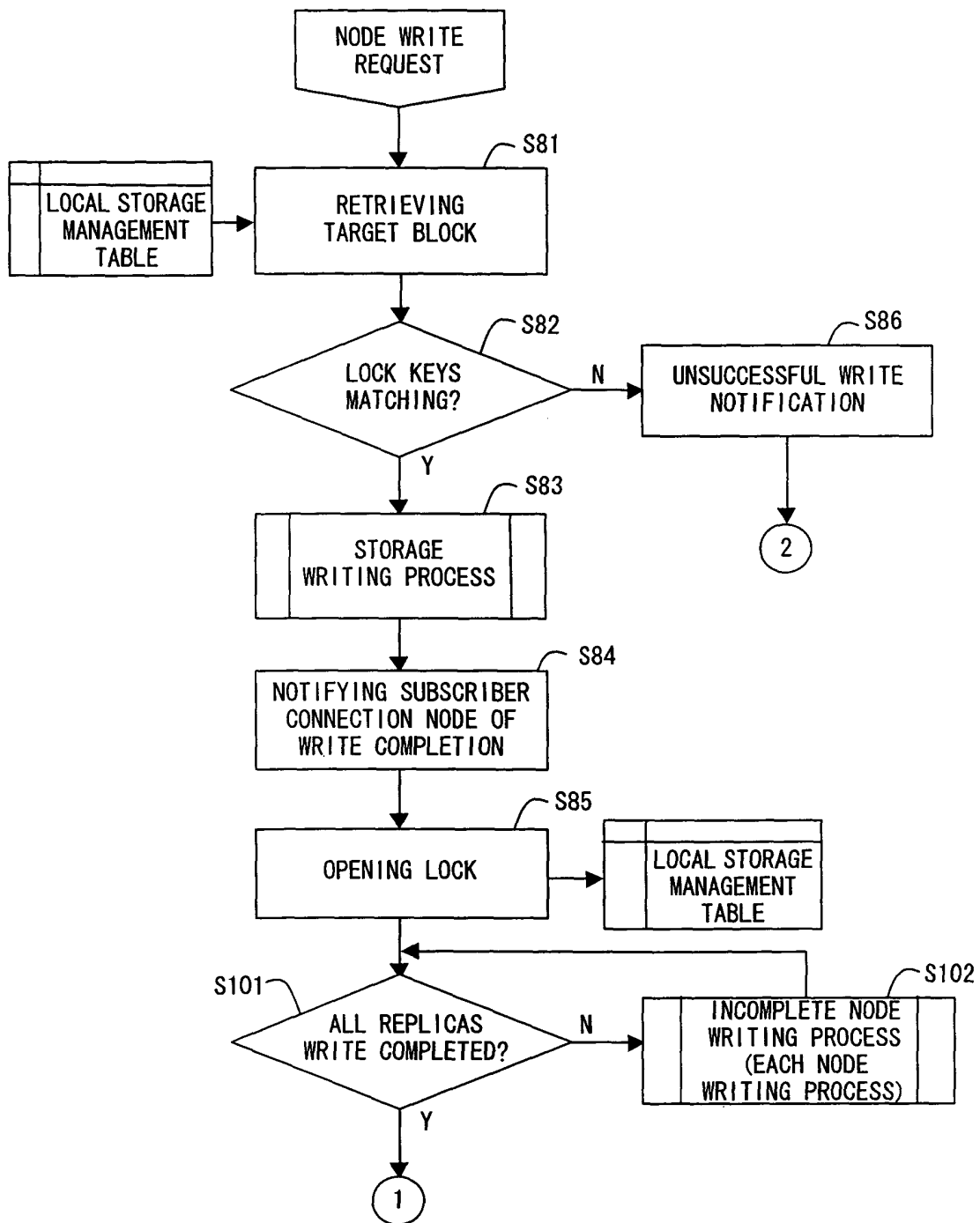


FIG. 25

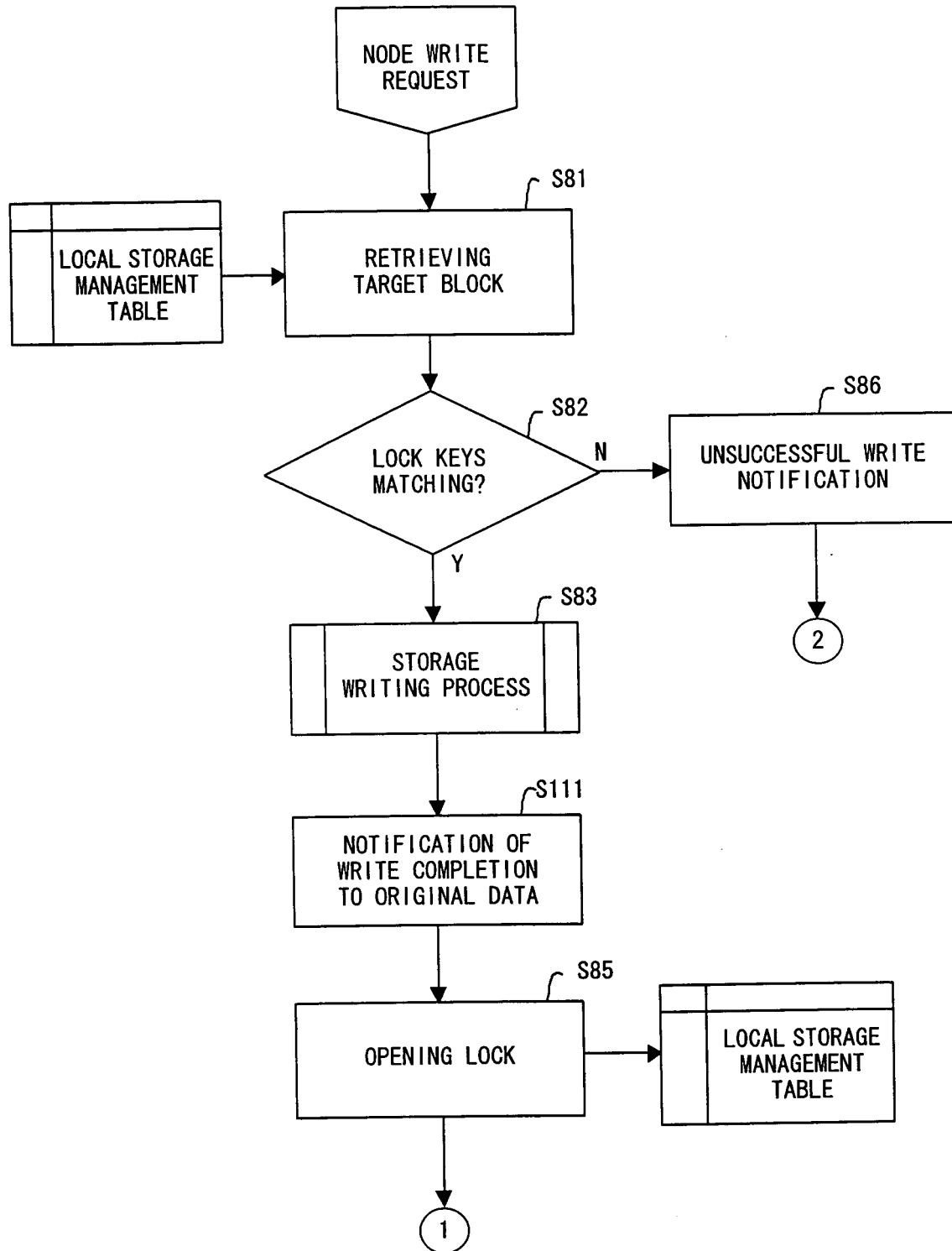


FIG. 26

NODE	USER A			USER E			USER E		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	—	16.3	2	—	∞	0	—
D	9.1	3	d	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2	a	13.0	1	a'	10.9	3	a'
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 27

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a'	16.3	2	a'	∞	0	a'
D	9.1	3	d'	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2	a'	13.0	1	a'	10.9	3	a
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 28A

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a	16.3	2	—	∞	0	a
D	9.1	3	d'	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2	a'	13.0	1	a'	10.9	3	a'
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 28B

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	—	17.8	2	—	11.3	2	—
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a	16.3	2	a	∞	0	a
D	9.1	3	d'	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2	a'	13.0	1	a'	10.9	3	a'
G	11.0	1	d	10.8	2	d'	8.4	3	d

FIG. 29

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a	16.3	2	a	∞	0	a
D	9.1	3	d'	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2	a'	13.0	1	a'	10.9	3	a'
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 30A

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a	16.3	2	a	∞	0	a
D	9.1	3	d'	17.0	1	d'	21.0	1	d'
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2		13.0	1		10.9	3	
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 30B

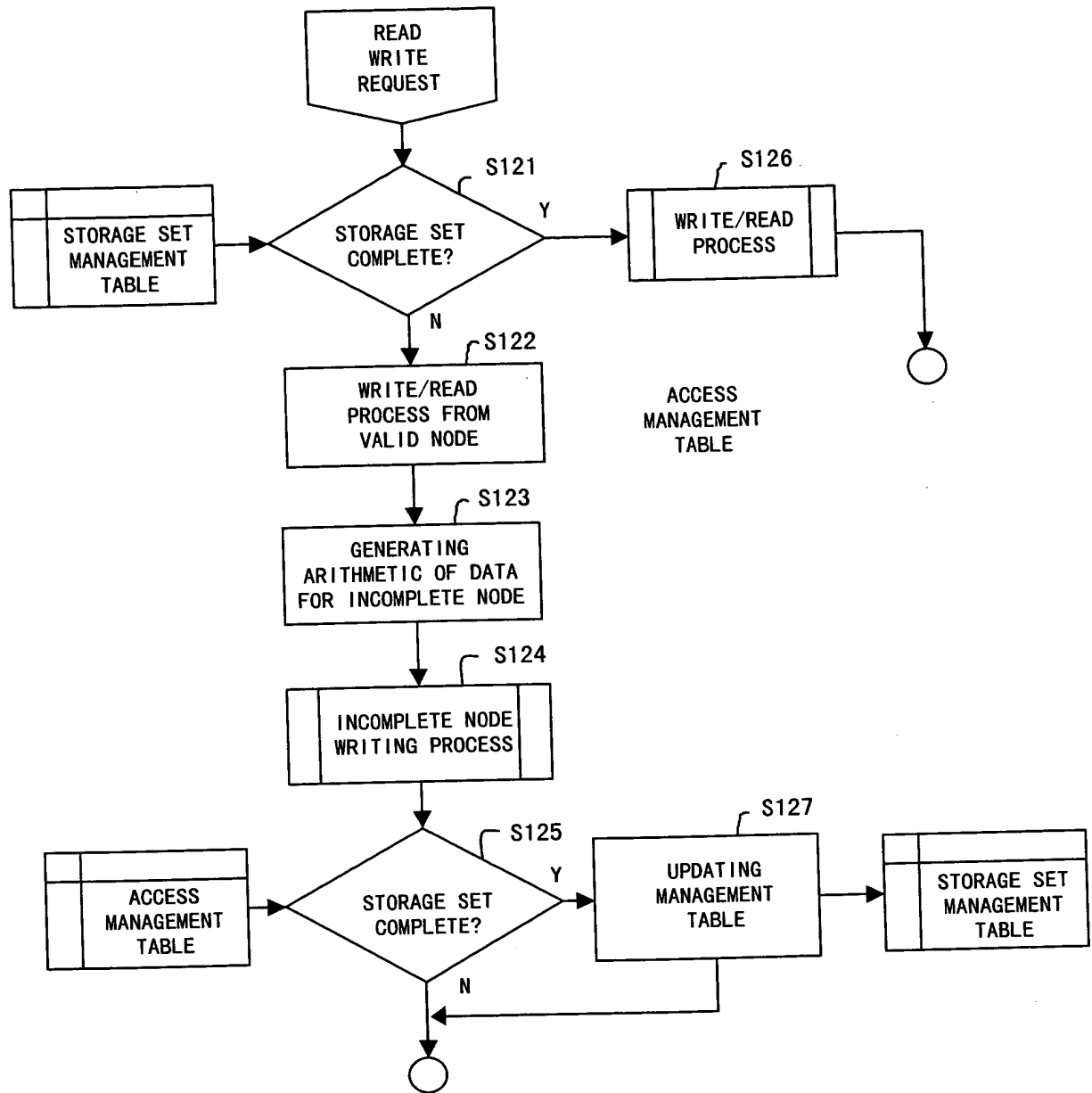


FIG. 31

NODE	USER A			USER E			USER C		
	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME	EVALUATION VALUE	HOP COUNT	VOLUME
A	∞	0	a	17.8	2	a	11.3	2	a
B	11.0	1	b	24.0	1	b	17.0	1	b
C	10.8	2	a	16.3	2	a	∞	0	a
D	9.1	3		17.0	1		21.0	1	
E	11.5	2	c	∞	0	c	14.8	2	c
F	8.3	2		13.0	1		10.9	3	
G	11.0	1	d	10.8	2	d	8.4	3	d

FIG. 32

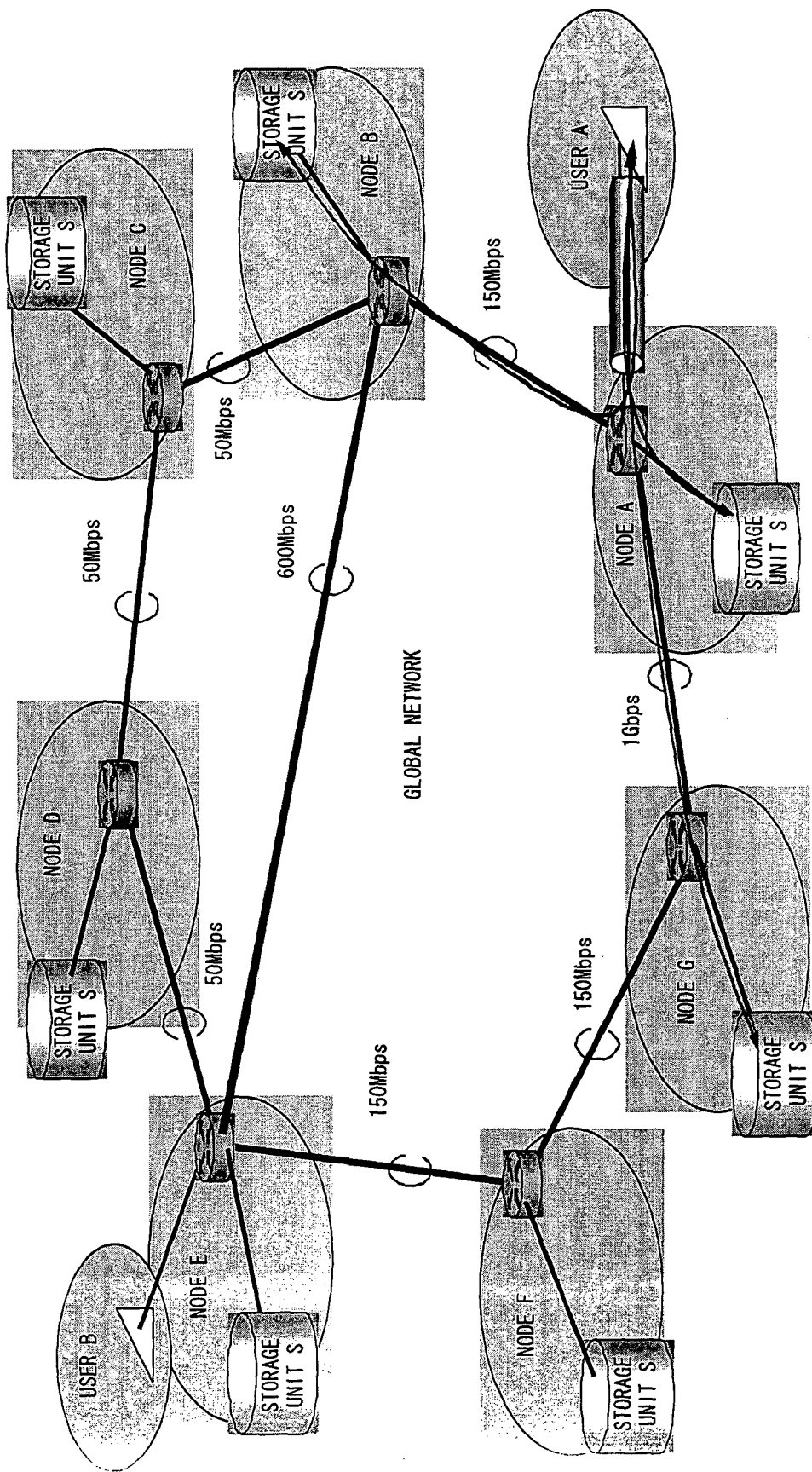


FIG. 33